

Classification of vehicle

Objective: At the end of this lesson you shall be able to

- state the classification of vehicle.

Classification of vehicles

Based on central motor vehicle act

- Motor cycle
- Three wheelers
- Medium passenger vehicle
- Heavy passenger vehicle
- Any other motor vehicle of a specified description
- Invalid carriage
- Light motor vehicle
- Medium goods vehicle
- Heavy goods vehicle

Based on wheel

- Two wheeler
- Four wheelers
- Multi axles
- Three wheelers
- Six wheelers

Based on fuel used

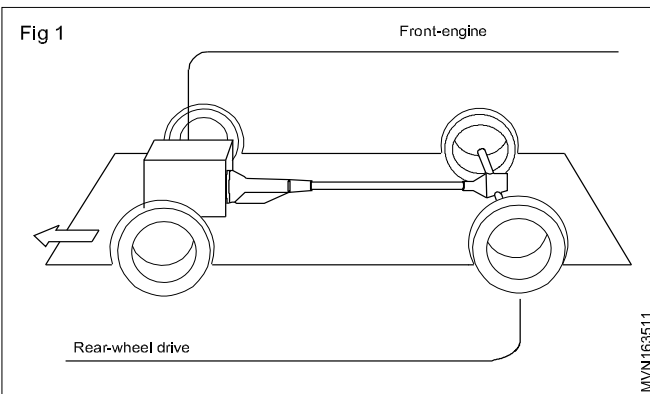
- Petrol vehicle
- Gas vehicle (CNG & LPG)
- Diesel vehicle
- Electric vehicle

Based on body

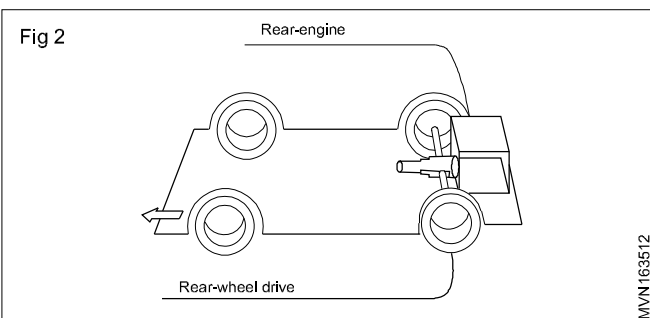
- Saloon (BMW, AUDI)
- Sedan (Maruti ciaz, ambassador etc)
- Hatch back (Alto, i10, santro, Tata Tiago)
- Convertible (Jeep, maruti gypsy)
- Station wagon (Innova, Ertiga, etc)
- Van (Omni, Touristor)
- Special purpose (Ambulance, Milk van, etc)

Based on drive

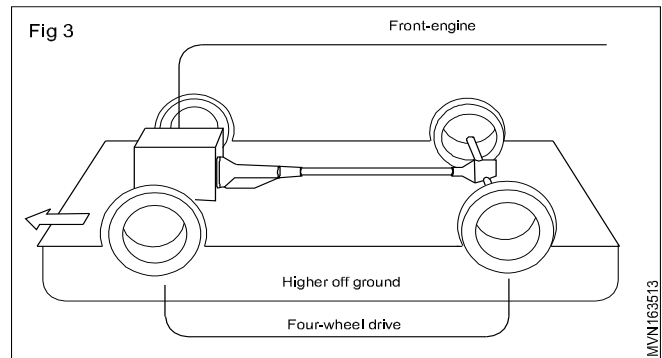
Front engine rear wheel drive (Sumo, Omni, Ambassador, etc.) (Fig 1)



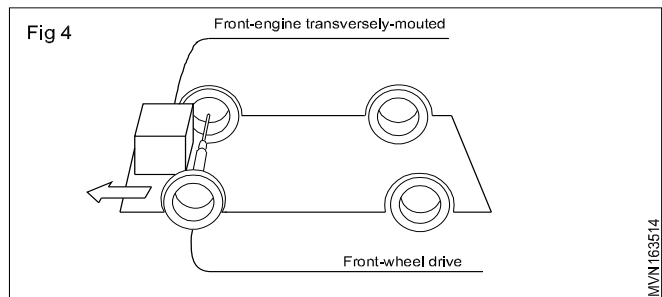
Rear engine rear wheel drive (Tata Nano, Bajaj auto, Valvo bus etc) (Fig 2)



Four wheel/ All wheel drive (Jeep, Scorpio, Gypsy etc.) (Fig 3)



Front engine front wheel drive (Alto, Ertiga, santro, Tiago etc.) (Fig 4)



Based on position of engine

- Front transverse engine (Example ; Maruti 800)
- Front longitudinal engine (Example ; Maruti Omni)
- Rear Transverse engine (Example ; Volvo bus)

Based on steering

- Conventional manual steering
- Power steering hydraulic
- Power steering electric

Based on transmission

- Manual transmission
- **Automatic transmission:** This is transmission that uses a torque converter, planetary gears set and clutches or bands to shift a vehicle's forward gears automatically.
- **Automated manual transmission (AMT):** This is an automated manual transmission it employs a mechanical clutch, but the action of the clutch is not controlled by the driver's clutch pedal. Gears shifts done by using automated electronic, pneumatic or hydraulic controls.
- **Continuously Variable Transmission (CVT):** This transmission has a continuously variable drive ratio and uses belts, pulleys and sensors rather than gears to maintain a steady acceleration curve with no pauses for gear changes. Because of this, a CVT can keep the engine in its optimum power range, thereby increasing efficiency and gas mileage.

Uses of hoists, jacks and stands

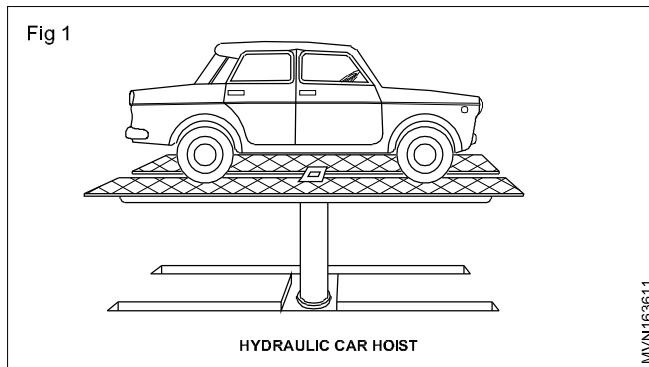
Objectives: At the end of this lesson you shall be able to

- state the function of vehicle hoists
- state the function of engine hoists
- state the function of jacks
- state the function of axes stand.

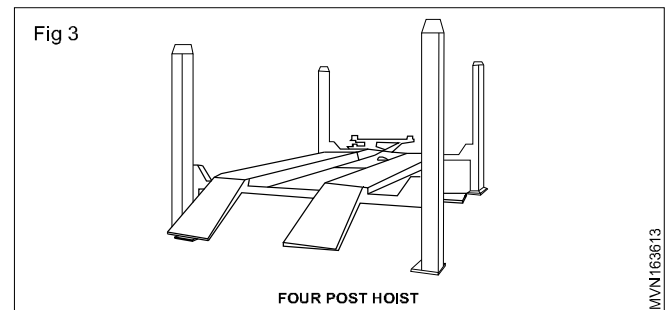
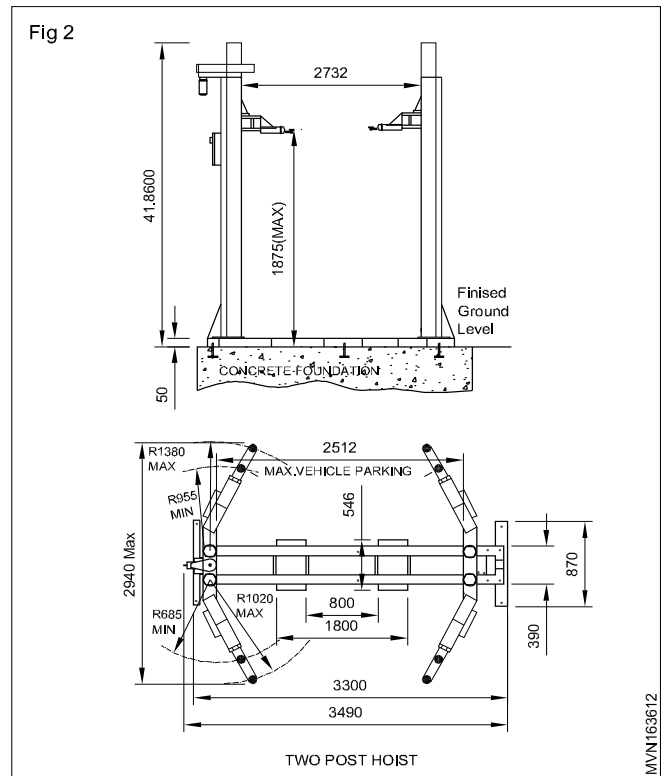
The modern automobile service stations are used the various types of equipments to lift the vehicles. They are as follows.

- Single post hydraulic car hoist
- Two post car hoist
- Four post car hoist
- Engine hoist
- Jacks
- Stands

Single post hydraulic car hoist (Fig 1): It is facilitate the servicing and repair works conveniently. It is constructed for dependable, trouble free performance and ensuring smooth and safe operation. The post is made of high grade steel. The car hoists are specially designed for resistant to wear and damage during water wash. Single post type is suitable for vehicle up to 6 tones.

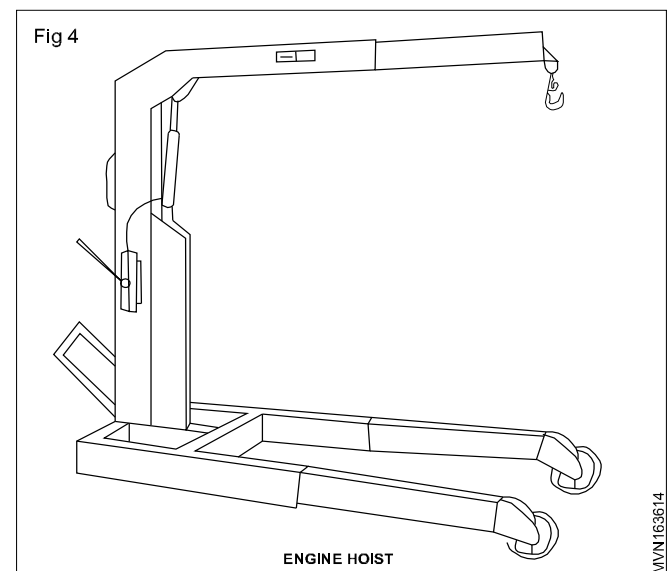


Two post hoist (Fig 2): It is operate by electro-hydraulic system. it is easy to operate and maintain the double post hoist and safety provision also provided to hold the vehicle. Double post type suitable for vehicle upto 4 tones.



Four post car hoist (Fig 3): It is operate by electro hydraulically and balancing the lifting vehicle. It is easy to operate and maintain the moving parts. Four post hoists is work as single and double post hoist it is suitable for lift the vehicle light and heavy vehicle.

Engine hoist (Fig 4): The engine hoist helps to lift an engine from a car/truck. The hydraulic pressure converts power to a mechanical advantage and lifts the engine from the car with less effort. When using a block and tackles for lifting an engine, use a lifting plate attached to the intake manifold or use a chain bolted at each end of the block so on. They are operated by moving the handle up and down. The other type of portable floor jack is the pneumatic jack which uses compressed air to lift a car or truck. It is mostly used in production side.



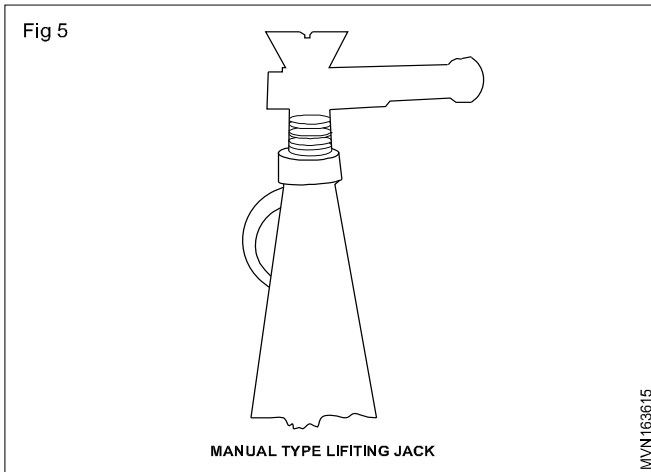
Never work under a car without safety stands or jack stands

On roads mostly mechanical jacks are used to lift the car/vehicle for small jobs. These jacks work under the principle of screw and nut.

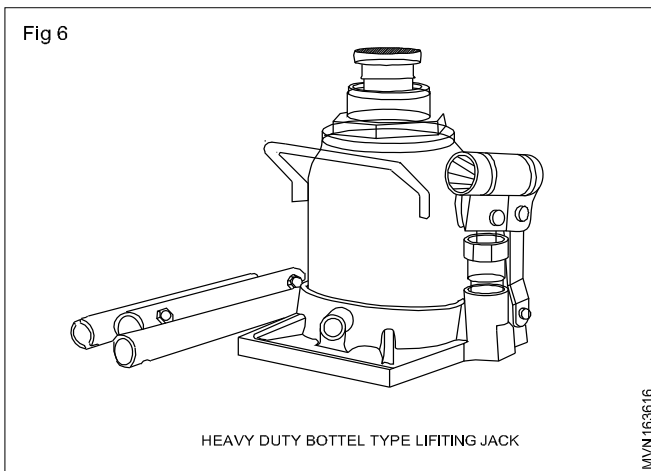
Jacks: It is used to lift the vehicle, which are operated by mechanically and hydraulically, Jack is designed to lift the vehicle and hold the vehicle load during the repair works. Jack is a standard accessory with many vehicles.

Types of jacks

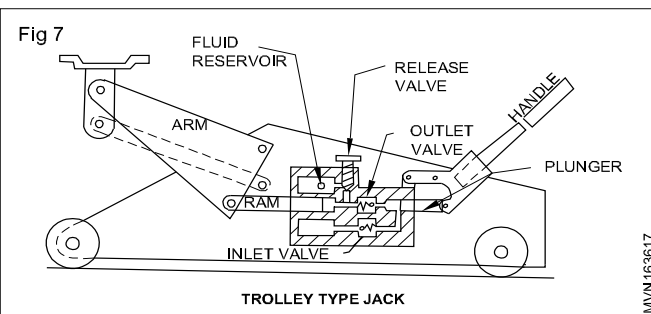
- Light weight screw jack (Fig 5)



- Heavy duty bottle type hydraulic jack (Fig 6)



- Trolley types hydraulic jack (Fig 7)



In raising front vehicle end off the floor by jacking, be sure to apply jack against front jacking bracket(1) (Fig 8).

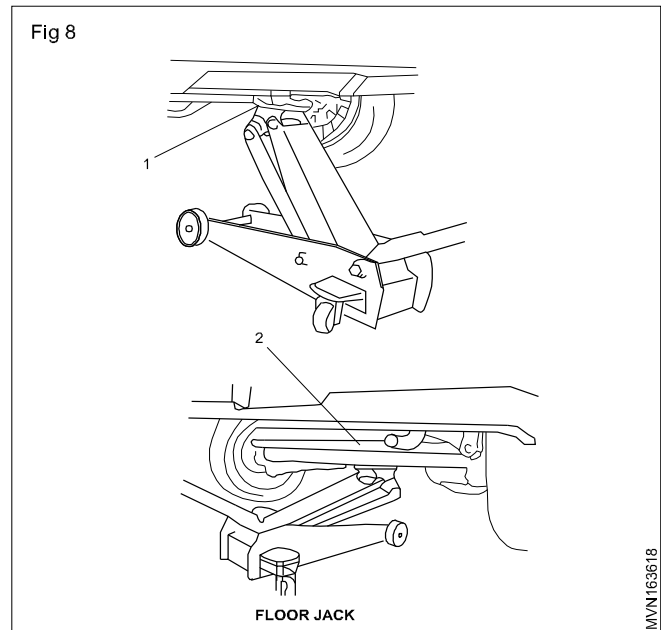
In raising rear vehicle end off the floor by jacking, be sure to apply jack against the center portion of rear axle (2).

Caution: Never apply jack against suspension parts (i.e., stabilizer, etc.) front bumper or vehicle floor, Otherwise it may get deformed.

Warning: If the vehicle to be jacked up only at the front or rear end, be sure to block the wheels on ground in order to ensure safety.

After the vehicle is jacked up, be sure to support it on stands. It is extremely dangerous to do any work on the vehicle raised on jack alone.

Axle stand (Fig 9): It is always injure safety before starting the work under the lifted vehicle, Jack support is not enough, it could be dangerous. Always use axle stands for safety work. Different size of stands are used depend upon the vehicle load.



To perform service with either front or rear vehicle end jacked up, be sure to place safety stands (1) under body so that body is securely supported. And the check to ensure that body does not slide on safety stands and the vehicle is held stable for safety.

